

U.S. Patent Application Serial No. 10/810,486
Amendment and Response to Office Action 11/19/2007
Reply to Office Action of May 31, 2007

REMARKS

This paper is filed in response to the Office Action mailed May 31, 2007. Claims 1, 3, 5-10, 12-19, 22-46, 48, 50-55, 57-64, 66-89, and 95-125 are pending in the present application. Claims 3, 5, 32, 39, 40, 48, 50, 77, 84-85, and 95-125 are withdrawn from consideration and claims 1, 6-10, 12-19, 22-31, 33-38, 41-46, 51-55, 57-64, 66-76, 78-83, and 86-89 are rejected. Claims 1, 6, 9, 12-14, 16, 17, 33, 36, 45, 51, 54, 55, 61, 62, 78, and 81 have been amended herein. Claims 2, 4, 7, 8, 10, 11, 15, 18-31, 34, 35, 37, 38, 41-44, 46, 47, 49, 52, 53, 56-60, 63-76, 79, 80, 82, 83, and 86-94 have been canceled. Claims 126-146 have been added. Amendments and cancellations have been made without prejudice or disclaimer. No new matter has been added. Reconsideration is respectfully requested.

Specification

The amendments to the specification herein, are to correct clerical and typographical errors. No new matter has been added.

Claim Amendments

Support for the amendments to the claims may be found in the specification and in the claims as filed. More particularly, support for the term "at least one high temperature resistant yeast cell" as recited by independent claims 1 and 45 may be found, *inter alia*, in Example 1, paragraph [0662]-[0690] of the published application.

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Support for the term “wherein the at least one high temperature resistant yeast cell exhibits a resistance to temperatures greater than temperatures tolerated by a parent yeast strain” as recited in amended independent claims 1 and 45, may be found, *inter alia*, in Examples 1 and 2 of the published application. More particularly, in paragraphs [0672]-[0686], Example 1 describes the selection and growth of high temperature resistance yeast cells at temperatures greater than the growth conditions for the parent strain.

Support for the term “in a manner that increases the error-prone frequency DNA replication in the at least one yeast cell such that the at least one DNA polymerase provides at least one mismatched base pair in a base sequence at a rate of 10^{-6} or greater” recited in, for example, amended independent claims 6 and 51, may be found, *inter alia*, in claims 25 and 70 as originally filed, and in the published application at paragraph [0577].

Support for added claims 126-139 may be found, *inter alia*, in claims 1-125 as originally filed and Examples 1-8, which pertain to experimental work conducted with yeast cells, embryonic stem cells (mouse), transgenic mice, rice, and *Arabidopsis thaliana*.

Rejection—35 U.S.C. 112

35 U.S.C. 112, second paragraph

Claims 1, 6-10, 12-19, 22-31, 33-38, 41-46, 51-55, 57-64, 66-76, 78-83, and 86-89 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite

for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 7, 8, 10, 15, 18-19, 22-31, 34, 35, 37, 38, 41-44, 46, 52, 53, 57-60, 63, 64, 66-76, 79, 80, 82, 83, and 86-89 have been canceled herein, mooted the rejection thereof. Applicant submits that the proposed claim amendments overcome any remaining alleged indefiniteness. More particularly, the claims do not recite the alleged indefinite term “high temperature resistance” without particularly pointing out and distinctly claiming the subject matter recited therein. Specifically, claims 1 and 45 have been amended herein to recite “selecting and isolating the at least one high temperature resistant yeast cell, wherein the at least one high temperature resistant yeast cell exhibits a resistance to temperatures greater than temperatures tolerated by a parent yeast strain.” Furthermore, any alleged lack of antecedent basis has been resolved. Therefore, in view of the proposed claim amendments, Applicant respectfully requests removal of the claim rejections under 35 U.S.C. § 112, second paragraph.

35 U.S.C. 112, first paragraph

Claims 1, 6-10, 12-19, 22-31, 33-38, 41-46, 51-55, 57-64, 66-76, 78-83, and 86-89 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter not enabled by the specification. Claims 7, 8, 10, 15, 18-19, 22-31, 34, 35, 37, 38, 41-44, 46, 52, 53, 57-60, 63, 64, 66-76, 79, 80, 82, 83, and 86-89 have been canceled herein, mooted the rejection thereof. In addition, Applicant notes that the

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remaining claims have been amended in light of the statement by the Examiner on the bottom of page 3, and top of page 4 of the Office Action. Applicant respectfully submits that the claims pending in the Application are fully enabled by the specification. Therefore, in view of the foregoing remarks and the proposed claim amendments, Applicant respectfully requests removal of the claim rejections under 35 U.S.C. § 112, first paragraph.

Rejection—35 U.S.C. 102(b)

Morrison et al.

Claims 1, 6-10, 12-14, 16-17, 23-25, 28-31, 33-38, 41-42, 45-46, 51-55, 57-59, 61, 66-70, 73-76, 78-83, and 86-87 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by *Morrison et al.* (*EMBO J.*, 1993). Claims 7, 8, 10, 23-25, 28-31, 34, 35, 37, 38, 41-42, 46, 52, 53, 57-59, 66-70, 73-76, 79, 80, 82, 83, and 86-87 have been canceled herein, mooting the rejection thereof. Applicant respectfully traverses the rejection of the remaining claims under 35 U.S.C. § 102(b) in light of *Morrison et al.* because *Morrison et al.* fail to teach each and every element of the remaining claims.

Morrison et al. disclose yeast strains comprising the *pol3-01* mutation of the *POL3* DNA polymerase gene and a deletion of the *PMS1* gene that lead to spontaneous mutation rates of ~130 and 41, respectively, relative to wild type. The yeast cells were screened by 5-fluoro-orotic acid resistance conferred by mutation to an inserted reporter gene *URA3* (*Morrison et al.*, abstract).

Amended independent claim 1 recites a method of producing at least one high temperature resistant yeast cell. The method includes modifying at least one amino acid position in a 3' to 5' exonuclease active site of at least one DNA polymerase operable in at least one yeast cell in a manner that increases the error-prone frequency of DNA replication in the at least one yeast cell. The method of claim 1 further includes selecting and isolating at least one high temperature resistant yeast cell, wherein the at least one high temperature resistant yeast cell exhibits a resistance to temperatures greater than temperatures tolerated by a parent yeast strain.

Similarly, amended independent claim 45 recites a method for producing at least one high temperature resistant yeast cell. The method of claim 45 includes modifying at least one amino acid position in a 3' to 5' exonuclease active site of at least one DNA polymerase operable in at least one yeast cell in a manner that increases the error-prone frequency of DNA replication in the at least one yeast cell, wherein the at least one DNA polymerase is selected from DNA polymerase δ and DNA polymerase ε. The method of claim 45 further includes selecting and isolating the at least one high temperature resistant yeast cell, wherein the at least one high temperature resistant yeast cell exhibits a resistance to temperatures greater than temperatures tolerated by a parent yeast strain.

Referring to independent claims 1 and 45, the Examiner pointed out on page 7 of the Office Action that Morrison *et al.* do not disclose selecting for at least one yeast cell

exhibiting high temperature resistance. As such, Morrison *et al.* do not disclose a yeast cell with resistance to temperatures greater than temperatures tolerated by a parent yeast strain as recited by claims 1 and 45. Therefore, for at least the reasons discussed herein, amended independent claims 1 and 45, and those claims dependent therefrom, are patentable over Morrison *et al.* Accordingly, Applicant requests that the claim rejections under 35 U.S.C. § 102(b) in light of Morrison *et al.* be removed.

Kokoska et al.

Claims 1, 6, 9, 10, 12-14, 16-17, 22-25, 28-31, 33-38, 41-46, 49, 51, 54-55, 57-59, 61-62, 73-76, 78-83, and 86-89 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Kokoska *et al.* (*Mol. Cell Biol.*, 2000). Claims 22-25, 28-31, 37, 38, 41-44, 46, 57-59, 73-76, 80, 82, 83, and 86-89 have been canceled herein, mooting the rejection thereof. Applicant respectfully traverses the rejection of the remaining claims under 35 U.S.C. § 102(b) in light of Kokoska *et al.* because Kokoska *et al.* fail to teach each and every element of the remaining claims.

Kokoska discloses mutator alleles of *POL3* and screening for canavanine resistance. However, Kokoska *et al.* do not disclose a cell with high temperature resistance of temperatures greater than temperatures tolerated by a parent strain of the cell. Furthermore, Kokoska *et al.* do not disclose selecting for at least one yeast cell with high temperature resistance as required by amended independent claims 1 and 45.

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Therefore, for at least the reasons discussed herein, amended independent claims 1 and 45, and those claims dependent therefrom, are patentable over Kokoska *et al.* Accordingly, Applicant requests that the claim rejections under 35 U.S.C. § 102(b) in light of Kokoska *et al.* be removed.

Double Patenting

Claims 1, 6-10, 12-19, 22-31, 33-38, 41-46, 51-55, 57-64, 66-76, 78-83, and 86-89 are provisionally rejected under nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1, 2, 4, 6-47, 49, 51-76, 78-83, and 86-89 of co-pending Application No. 10/550,924.

Applicant notes the double patenting rejection and respectfully reserves response until the notice of allowable subject.

CONCLUSION

In view of the foregoing, it is believed that all of the claims are patentable in their present form, and a prompt notice of allowance for this case is respectfully requested. As mentioned above, if the Examiner finds any remaining impediment to the prompt allowance of this application, please contact the undersigned attorney.

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Respectfully submitted,



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